

IN THE SPECIFICATION

Please amend the specification as follows:

The paragraph beginning at page 29, line 10 is amended as follows:

In one embodiment, a plot is generated to graphically illustrate the relationship between atrial characteristic points and ventricular characteristic points. In Fig. 12, a plot is shown for approximately 500 rhythms that had either supra-ventricular origin (SVT) or ventricular origin (VT). The X, or horizontal axis is $100 \cdot (V:A/V_{\text{ent}})$ $100 \cdot (V:A/V_{\text{cnt}})$ and the Y, or vertical axis is $100 \cdot (A:V \cdot V_{\text{ent}}/A_{\text{ent}}^2)$ $100 \cdot (A:V \cdot V_{\text{cnt}}/A_{\text{cnt}}^2)$.

The paragraph beginning at page 29, line 29 is amended as follows:

Fig. 13 illustrates exemplary method 450 according to one embodiment of the present subject matter. At 455, an atrial series of characteristic points are generated from an atrial channel and a ventricular series of characteristic points are generated from a ventricular channel. The total number of atrial characteristic points is denoted as A_{cnt} and the total number of ventricular characteristic points is denoted as V_{cnt} . At 460, a time window is established in advance of each characteristic point in the ventricular channel. At 465, a backward count is generated by counting, in a single pass through the ventricular series of characteristic points, all ventricular characteristic points that have at least one atrial characteristic point in the window. At 470, a forward count is generated by counting, in a single pass through the ventricular series of characteristic points, all atrial characteristic points that fall into at least one window associated with a ventricular characteristic point. In one embodiment, these counts may be performed in the same single pass through the ventricular characteristic points. At 475, X and Y values are generated based on the forward count, the backward count, ~~A_{ent} and V_{ent}~~ A_{cnt} and V_{cnt} . In one embodiment, the X-value indicates the backward count expressed as a percentage of all ventricular characteristic points. In one embodiment, the Y-value indicates the ratio of forward count to backward count. In one embodiment, the Y-value indicates $(A:V) \cdot V_{\text{cnt}}/A_{\text{cnt}}^2$. At 480, the X-Y point is classified to discern a rhythm type. Classification of the data, in one embodiment, includes selecting a separation line or separation contour in the X-Y plane. Data falling on one side of the separation line or contour denotes a particular rhythm type while data

on another side denotes a different rhythm type. In one embodiment, a separation line or contour is selected according to methods known as Support Vector Method (SVM) or support vector classification (SVC) (see V. Vapnik. *The Nature of Statistical Learning Theory*. Springer-Verlag, New York, 1995, and others). Factors to consider in placement of a separation line include determining the placement of the line and a slope. Considerations include the proximity of the data points and the width of a separation region between different portions of the X-Y plane. In one embodiment, the X-Y plane is regionalized in a manner that maximizes the separation of data points.